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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/922,936	08/07/2001	Raj N. Master	52352-483	9521

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600 13th Street, N.W.  
Washington, DC 20005-3096

EXAMINER

PITTMAN, ZIDIA T

ART UNIT	PAPER NUMBER
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1725

16

DATE MAILED: 05/19/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

mic-16

Office Action Summary

Application No. 09/922,936	Applicant(s) MASTER ET AL.	
Examiner Zidia Pittman	Art Unit 1725	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 22-30 is/are pending in the application.
- 4a) Of the above claim(s) 1-17 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 25 and 26 is/are allowed.
- 6) ☒ Claim(s) 18,22-24 and 27-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 18, 22-24, and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Brownfield et al (USPN 26,399,902).

Brownfield et al teaches an inline flux measurement system. The apparatus comprises two main components, a controller and a scale means for measuring the weight of an IC component to which the flux is to be applied. The controller is a computer that is capable of computing data from feedback from the scale measuring means. The IC component could be a flip-chip die having solder bumps or a packaging substrate with conductive traces to which the solder bumps are bonded. The controller accepts the signal from the scale means and computes the volume amount of flux to be

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dispensed on the IC component. A signal is sent from the controller through line to a liquid flow controller. The signal causes the LFC to open allowing flux from storage container to move through pipes and to spray nozzle. The flux dispensing means can be a flux needle. The controller can be preset to dispense a specific volume of flux or preset to dispense flux based on a specific change in weight of the IC component. (col. 2, l. 58 – col. 3, l. 38)

With respect to the limitations requiring the data processing device adapted for controlling valve pressure in a range between about 1.5 and 30 psi, flux viscosity in a range between about 10 and 150 centipoises, and flux spray pattern based on a configuration of the substrate and an arrangement pattern of conductive terminals and controls movement of the flux dispense nozzle in at least two dimensions relative to the substrate and decides a plurality of subsets based on the configuration of the substrate and the arrangement pattern of conductive terminals thereon, each subset comprising a plurality of conductive terminals closely located to each other, wherein the substrate is a printed circuit board or a flip-chip type electrical component and the plurality of conductive terminals are flip-chip pads or bumps arranged on the printed circuit board or flip-chip type electrical component, it is the examiner's position that these limitations do not further limit the structural aspects of the apparatus. Furthermore, the reference need only teach the structural limitations of the apparatus with those limitations capable of performing the functions indicated. Brownfield et al teaches the structural limitations required by the claims as indicated above.

Claims 18, 22, 23, and 27-30 are rejected under 35 U.S.C. 102(e) as being anticipated by Hogan et al (USPN 6,265,017).

Hogan et al teaches a control system for applying solder flux to a printed circuit. There is shown a system for applying a flux coating to a substrate such as a circuit board. A spray gun having a nozzle is disposed within coating chamber and emits a liquid spray pattern from nozzle. A control system is operatively connected to spray gun for intermittently pulsing gun on and off to coat overlapping sections of the undersurface of circuit board in response to circuit board moving a predetermined distance through coating chamber. (col. 3, l. 42-56; col. 5, l. 48 – col. 6, l. 13)

With respect to the limitations requiring the data processing device adapted for controlling valve pressure in a range between about 1.5 and 30 psi, flux viscosity in a range between about 10 and 150 centipoises, and flux spray pattern based on a configuration of the substrate and an arrangement pattern of conductive terminals and controls movement of the flux dispense nozzle in at least two dimensions relative to the substrate and decides a plurality of subsets based on the configuration of the substrate and the arrangement pattern of conductive terminals thereon, each subset comprising a plurality of conductive terminals closely located to each other, wherein the substrate is a printed circuit board or a flip-chip type electrical component and the plurality of conductive terminals re flip-chip pads or bumps arranged on the printed circuit board or flip-chip type electrical component, it is the examiner's position that these limitations do not further limit the structural aspects of the apparatus. Furthermore, the reference need only teach the structural limitations of the apparatus with those limitations capable

of performing the functions indicated. Hogan et al teaches the structural limitations required by the claims as indicated above.

***Response to Arguments***

Applicant's arguments filed March 4, 2003 have been fully considered but they are not persuasive.

In response to applicant's argument that the controller 101 of Brownfield is not disclosed as structurally capable of controlling valve pressure for spraying flux, the examiner submits the following. Brownfield discloses a controller that is a computer (col. 2, l. 61-62) that computes the volume amount of flux to be dispensed on the IC component (col. 3, l. 4-6) and a liquid flow controller (col. 3, l. 9). Being that the controller of Brownfield is a computer and discloses controlling the volume amount of flux to be dispensed and discloses controlling the flow of the flux and since controlling the amount of flux is related to how the flux is dispensed, Brownfield is structurally capable of controlling valve pressure for spraying flux.

In response to applicant's argument that all the limitations discussed in the previous office action with regard to the dependent claims, namely the data processing device adapted for controlling a specific valve pressure range and a specific flux viscosity range, the basis of the flux spray pattern, and a defined substrate, the examiner submits the following. The claims are directed toward an apparatus for dispensing flux on a substrate including a data processing device. Brownfield discloses an apparatus for dispensing flux on a substrate including a controller that is a computer. One of the substrates disclosed by Brownfield as being used with the disclosed

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apparatus is a flip-chip die (col. 3, l. 40). The controller of Brownfield provides a variety of functions relating to the dispersion of the flux (see col. 3, l. 4-38). The limitations as claimed by applicant does not further structurally limit the apparatus nor distinguish it from the apparatus as disclosed by Brownfield as the apparatus of Brownfield is capable of performing the functions on the substrates as claimed. The examiner further submits that the specification of the instant application does not disclose a structural limitation of the apparatus that allows for the controlling of the flux viscosity, only that an optimum flux viscosity is determined and the flux is dispersed at that viscosity (for example, see pg 5, l. 12-26; pg 6, l. 27-31).

In response to applicant's argument that all the limitation of a data processing device configured to control valve pressure, flux viscosity, and flux spray pattern as well as other limitations listed in the dependent claims structurally limit the invention and are not taught by Hogan et al, the examiner submits the following. The claims are directed toward an apparatus for dispensing flux on a substrate including a data processing device. Hogan et al discloses an apparatus for dispensing flux on a substrate including "a control system is operatively connected to a spray gun for intermittently pulsing gun on and off to coat overlapping sections of the undersurface of circuit board in response to circuit board moving a predetermined distance..." (col. 3, l. 49-53) and "the control system, after having the first distance between the sensor and the forward edge of the spray pattern, the selected period of time and the predetermined number of encoder pulse signals already inputted into the pulsing program..., is activated when a circuit board is moved by conveyor under sensor" (col. 5, l. 48-54). The limitations as claimed

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by applicant does not further structurally limit the apparatus nor distinguish it from the apparatus as disclosed by Hogan et al as the apparatus of Hogan et al is capable of performing the functions on the substrates as claimed. The examiner further submits that the specification of the instant application does not disclose a structural limitation of the apparatus that allows for the controlling of the flux viscosity, only that an optimum flux viscosity is determined and the flux is dispersed at that viscosity (for example, see pg 5, l. 12-26; pg 6, l. 27-31).

***Allowable Subject Matter***

Claims 25 and 26 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record does not teach an apparatus for dispensing flux on a substrate, particularly the flux needle having a diameter range between about 0.1 mm to about 0.6 mm.

***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of



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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zidia Pittman whose telephone number is (703) 305-1248. The examiner can normally be reached on Monday – Thursday and alternate Fridays from 8:30 am to 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn, can be reached at (703) 308-3318. The official fax phone number for the organization where this application or proceeding is assigned is (703) 305-7718. The unofficial fax number for art unit 1725 is (703) 305-6078.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

37P  
5/15/03



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